Questions & Answers Sessions

Please type your questions in the Question Box. We will try our best to get to all your questions. If we don't, feel free to email Erika Podest (erika.podest@jpl.nasa.gov), Jackie Ryan (jacqueline.ryan@jpl.nasa.gov) or Karen Yuen (karen.yuen@jpl.nasa.gov).

Question 1: I want to use SIF data to analyze forest health and want to check it relative to air pollutants' impacts on forests. I would like to have some suggestions related to this.
Answer 1: SIF is a valuable measurement for analyzing forest health and assessing the impacts of air pollution. There are many studies using SIF to assess the impact of climate anomalies on forest health, and a few studies that use SIF to assess the impact of air pollutants. The challenge is to isolate the impact of air pollutants from other factors, such as heat and drought. Here are a few examples of using SIF to investigate the impact of air pollutants on forest health:
https://pmc.ncbi.nlm.nih.gov/articles/PMC9805897/
https://www.mdpi.com/2072-4292/14/16/3854

Question 2: I got this error, does anybody know why? "PermissionError: [WinError 5] Access is denied: 'data/gosif/animation/temp_frames'"
Answer 2: If you have the folder open in Windows Explorer, you may get this error. Windows is less extensively tested than Mac OS.

Question 3: Hello, I want to know the difference between the SAM and Target acquisition modes of OCO-3. Can both modes be collected together for a site (for e.g., flux tower site)?
Answer 3: These two modes cannot be collected at the same time, but they can be collected at different times over the same site. SAM collects SIF observations over an ~80 km x 80 km area within two minutes. Target mode observations cover a much smaller area than SAM and are primarily used for validation purposes.

Question 4: SIF data has higher values in July/August of the year. What factors drive the values?
Answer 4: SIF is an indicator of plant productivity. Plants growth requires light, energy and water, which are higher in July/August in the northern hemisphere. That is the

reason that SIF has higher values in the northern hemisphere in those months. While in the Southern hemisphere, SIF has higher values in Jan/Feb for the same reason.

Question 5: What are the specific differences between NDVI and SIF values?
Answer 5: NDVI measures the “greenness” or color of vegetation using the ratio of light reflected in different wavelengths. In contrast, SIF is derived from spectrometer measurements and reflects the plant’s actual physiological activity—essentially how much energy it’s using for photosynthesis. Because SIF responds directly to changes in plant function, it provides a faster indication of plant stress or activity, whereas NDVI tends to lag and shows changes only after they are visible in leaf color or canopy structure.

Question 6: Are there plans to expand SIF coverage via additional satellites?
Answer 6: FLEX will be launched in late 2026 (Italian Space Agency) (https://www.esa.int/Applications/Observing_the_Earth/FutureEO/FLEX) and the main observable will be SIF. Scientists are actively working on retrieving SIF from other satellites that have SIF bands, such as TEMPO, a geostationary satellite over North America. Generating gap-filled SIF products is an active area of research, which will expand SIF spatiotemporal coverage. An unpublished work shows promise in generating gap-filled SIF products by combining GOES and OCO-3.